OCEAN TOPOGRAPHY EXPERIMENT (TOPEX/POSEIDON)

(Emergency Support)

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MOM: R. A. Stiver
LV/Range: Ariane/CSG

Launch Date: July 1, 1992
Projected SC Life/DSN Support: 5 years/5 years

Project Responsibility: Jet Propulsion Laboratory (JPL)

Source: SIRD Rev. A, January 1990/NSP late 1990
Sponsor: OSO

A. MISSION DESCRIPTION

The TOPEX Mission consists of a single TOPEX spacecraft which will be placed in a high Earth circular orbit, with an altitude of 1334 km and a 63-deg inclination. Earth tracks will repeat every 10 days. Using an altimeter, TOPEX will map the topography of the ocean's surface to obtain scientific data for use in determining global ocean circulation patterns.

Of particular interest to JPL is the Global Positioning Satellite (GPS) demonstration. Receivers and media calibration equipment at the DSS Media Calibration Subsystem at the three DSN complexes will augment the GPS system to provide a differential GPS data type, which will be used for precision orbit determination. With three DSN sites, 15-cm accuracy is anticipated. If three additional sites are acquired, >10-cm accuracy is expected.

B. FLIGHT PROFILE

The TOPEX spacecraft will be launched from the Centre Spatiales de Guiana in French Guiana on an Ariane launch vehicle.

C. COVERAGE

The DSN will support the transfer and drift orbit mission phases.

1. Coverage Goals

Emergency support will be provided by the DSN 26-m subnet as required for backup support of TDRS.

2. GPS Space Vehicle Coverage

The DSS Media Calibration Subsystem will provide continuous coverage of the constellation of GPS Space Vehicles (GPSss-SV). The constellation will have between 18 and 24 satellites.

3. TOPEX GPS Receiver Coverage

Radio metric data acquired by the GPS Receiver on TOPEX comes to JPL through the TDRS telemetry link.

D. FREQUENCY ASSIGNMENTS

Frequencies are allocated according to the following table:

System	Uplink (MHz)	Downlink (MHz)	Polarization
GPS L2	--	1227.60	RCP
GPS L1	--	1575.4	RCP

All GPS Space Vehicles (SV) transmit on the same two frequencies. Each GPS SV is assigned unique orthogonal PN codes that modulate the carriers and allow a ground receiver to separate the signals from individual GPS SVs.

E. TRACKING SUPPORT RESPONSIBILITY

The allocation of responsibilities for tracking support is listed in the following table:

Mission Phase	Support Responsibility
Ariane Launch	GSG
High Earth orbit	TDRS
Emergency Support	DSN
GPS Demonstration Support	DSN

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